VIRGINIA'S PROPOSAL

TO THE

NATIONAL GOVERNORS ASSOCIATION

SCIENCE, TECHNOLOGY, ENGINEERING AND MATH CENTER GRANT PROGRAM

MAY 15, 2007

GOVERNOR TIMOTHY M. KAINE

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Overview

Virginia has targeted its STEM Center proposal to the NGA toward development of model programs in career and technical education (CTE). These programs will expand options for ***the general population of students*** to acquire STEM literacy and other critical knowledge, skills and credentials that will prepare them for high-demand, high-wage and high-skill careers in Virginia.

Virginia has excelled at developing programs for gifted and talented students through outstanding Governor's Schools, specialty centers and various acceleration and enrichment programs. We have also done a good job of producing and attracting college-educated scientists, engineers and other knowledge workers. However, we have fallen short in developing critical 21st Century skills in the general student population. We will not be able to meet the needs of Virginia's current and emerging industries without raising the educational achievement and attainment of this middle majority. We have identified CTE as a promising avenue for developing these skills through applied learning in a relevant context, closely tied to Virginia's business needs and economic development objectives.

Specifically, we propose to work with state policy-makers, local school divisions, local government including regional workforce and economic development officials, industry partners, community colleges and universities to:

- Create several **Governor's Academies for Career and Technical Education**, which will be the applied learning complement to Virginia's successful Governor's School program. These will be Virginia's new STEM Centers. Academies will offer career pathways addressing both immediate regional skill gaps and longer-term STEM-related strategic gaps, as identified in Virginia's Gap Analysis (Attachment A – Part A). Through high standards, recognition, acceleration options and industry and higher education partnerships, these programs will directly challenge current belief structures about career and technical education. They will serve as model programs for the transformation of CTE throughout Virginia and the nation.
- Establish a high standard for all CTE programs through a **Governor's Exemplary Standards Award program**. This will be a continuous quality improvement process engaging K-12 and higher education, the business community and state, regional and local officials. The opportunity to earn this distinction will create an incentive for programs to meet high academic standards and improve other measures of program quality, strengthen their partnerships and alignment with postsecondary education and industry, and demonstrate relevant and positive outcomes. Programs earning this distinction will form a growing network of exemplary programs to share best practices with each other and with other programs striving for the designation. All CTE programs will be eligible to seek exemplary status. The criteria for the awards will ensure that all programs earning exemplary status will raise the STEM literacy of participating students through rigorous academic and programmatic standards.

Commitments/Non-negotiables

1. ***Commitment to NGA Graduation Rate Compact.*** Governor Tim Kaine has reaffirmed Virginia's commitment to accurate and meaningful reporting of high school graduation data by signing the NGA Graduation Rate Compact. In 2005 Virginia implemented a unique identifier in its Educational Information Management System to permit longitudinal tracking of student data. Data collection has proceeded, and we will report the first four-year graduation rate data for the Class of 2008. Efforts are underway to create a virtual P-16 data system by linking existing longitudinal systems across the educational pipeline.
2. ***Commitment to actively participate in the National Educational Data Partnership.*** Virginia actively participates in the National Education Data Partnership initiative and was one of the first states to provide complete data for Standard & Poor's (S&P) SchoolMatters.com. The Department provides a link to SchoolMatters.com on its home page, and uses these data sources to make national comparisons about student achievement.

3. ***Commitment to create and execute a communications plan.*** The Secretary of Education has appointed a communications work group of the P-16 Education Council to oversee development and implementation of an executive communication plan for Virginia's high school reform. This group will continue its work and adapt the current plan to build and sustain public support for STEM education redesign and improvement.

4. ***Commitment to an aligned P-16 governance structure.*** Virginia's P-16 Education Council was created by executive order in 2005 and renewed in 2006. In the executive order renewing the council, Governor Kaine announced his intention to submit legislation to the 2008 General Assembly to make the council permanent. The council is chaired by the Governor's Secretary of Education and includes executive-level representation from the Board and Department of Education, the State Board for Community Colleges and the Virginia Community College System, the State Council of Higher Education at the board and staff level, public and independent higher education institutions, state and local elected officials, business leaders, the Virginia Education Association, the National Science Foundation, and additional state agencies. Information about the Council and its responsibilities, as well as its first report and recommendations, are available on the Secretary's web page at http://www.education.virginia.gov/Initiatives/P-16Council/index.cfm.

5. **Commitment to set specific 10-year performance goals.** As part of its Honor States grant commitment, Virginia has been working to develop 10-year performance goals with direct and supporting indicators for high school graduation and college and workplace readiness. A draft of the 10-year goals has been finalized and shared with NGA staff, and is scheduled for consideration by the P-16 Education Council at an upcoming meeting. The P-16 Council will expand upon these goals to include more STEM-related indicators in consultation with NGA staff. By securing approval of the goals from the P-16 Council, we will ensure that all education agencies and boards have signed on to these priorities.

6. **Commitment to publicly report the objectives of the STEM Center Grant and the identified 10-year goals along with baseline and improvement data.** Through Virginia's P-16 Education Council, we will report on the objectives, goals and results of the STEM Center Grant. Communication will include development of a grant Web page on the Governor's site, information on the Web sites of participating agencies and offices, formal reports to the Governor and General Assembly, and presentations to stakeholder groups, as well as any reporting requested by the NGA and funders.

A. Gap Analysis of Virginia's Policy Landscape

Please see Attachment A.

B. Team Leadership and Membership

Team Leader: Tom Morris, Virginia's Secretary of Education, is the team leader for this initiative. Secretary Morris was appointed by Governor Kaine in 2006 to lead his education agenda. One of the Governor's key education goals is to raise the quality and profile of career and technical education, and Secretary Morris' leadership of the STEM Center project will directly advance this component of the Governor's agenda. Prior to his appointment within the Governor's Cabinet, Secretary Morris served as the president of Emory & Henry College for 13½ years. A distinguished Constitutional scholar and political scientist, he was a distinguished faculty member at the University of Richmond for 21 years, and is widely known as an expert on Virginia government and politics. Dr. Morris chairs Virginia's P-16 Education Council, and works closely with the agencies and boards in the Education Secretariat including the Department and Board of Education, the Community College System, the State Council of Higher Education, and public and independent colleges.

Co-leadership will be provided by Dr. Billy K. Cannaday, Jr., Superintendent of Public Instruction, Chancellor Glenn DuBois of the Virginia Community College System, and Executive Director Daniel LaVista of the State Council of Higher Education for Virginia, who are also members of the P-16 Council. These individuals will provide leadership in the K-12 and higher education communities to ensure close coordination among educational sectors in implementation of the project.

STEM Center Design Team

Governor's Office and Advisors

- Dr. Thomas R. Morris, Secretary of Education*
- Mr. Patrick O. Gottschalk, Secretary of Commerce and Trade*
- Mr. Daniel G. LeBlanc, Senior Advisor to the Governor for Workforce*
- Ms. Judith E. Heiman, Deputy Secretary of Education
- Mr. Douglas Garcia, Assistant Secretary of Education
- Ms. Jean Bankos, Senior Advisor to the Governor on Education Projects
- Ms. Jennie P. Moline, Special Assistant to the Governor for Policy

Virginia Department of Education

- Dr. Billy K. Cannaday, Jr., Superintendent of Public Instruction*
- Dr. Linda M. Wallinger, Assistant Superintendent for Instruction
- Ms. Elizabeth M. Russell, Director of Career and Technical Education

State Council of Higher Education for Virginia

- Dr. Daniel J. LaVista, Executive Director*

Virginia Community College System

- Dr. Glenn DuBois, Chancellor*
- Dr. Monty Sullivan, Vice Chancellor for Academic Services
- Mr. Peter Blake, Vice Chancellor for Workforce Development Services
- Ms. M. Elizabeth Creamer, Director of Postsecondary Perkins Tech-Prep

Local Education Agencies and CTE Educators

- Dr. Patrick Konopnicki, Director of Technical & Career Education, Virginia Beach Schools*
- Mr. Darah Bonham, Director, Charlottesville-Albemarle Technical Education Center (regional)*
- Ms. Sandy Jones, President, Virginia Association for Career and Technical Education*

Business and Industry

- Mr. John O. (Dubby) Wynne, Vice-Chairman, Council for Virginia's Future, and retired President and CEO, current Board member, Landmark Communications, Inc.*
- Ms. Katherine Elam Busser, Senior Vice President, Capital One*
- Dr. James G. Batterson, Senior Aerospace Engineer and Deputy Director for Strategic Development, NASA Langley Research Center and Special Assistant on Loan to the Secretary of Education*
- Dr. Emily Richardson, President, Virginia Career Education Foundation*

Virginia General Assembly

- The Honorable Phillip Hamilton, member, Virginia House of Delegates and House Education and House Appropriations Committees*
- The Honorable Frank Wagner, member, Senate of Virginia and Senate Commerce and Labor Committee*
- The Honorable John A. Cosgrove, member, Virginia House of Delegates and House Science and Technology Committee, and Chairman, Joint Subcommittee Studying Science, Math, and Technology Education in the Commonwealth at the elementary, secondary, and undergraduate levels*

In addition, the team will work with the Virginia Biotechnology Association (VaBIO), Virginia Nanotechnology Initiative (VNI), Virginia Modeling, Analysis and Simulation Center (VMASC), Center for Innovative Technology (CIT), Virginia Manufacturers Association, and other industry, academic and government groups focused on leading and emerging industry clusters.

*Letters provided in Attachment D from highest-ranking official in agency. The Governor's support and commitment are described in the proposal cover letter.

C. Virginia's STEM education goals to be supported by STEM Center Grant

The overall goal of Virginia's STEM Center grant project is to reinvigorate career and technical education as an option for all students, with the same postsecondary pathways readiness expectations as for non-CTE students, particularly in training for high-demand, high-wage and high-skill occupations. (Recommendation #3, Strategy #4 in *Building a Science, Technology, Engineering and Math Agenda*.)

The STEM education goals to be supported by this project are:

1. Increase the readiness of high school graduates for college level work in STEM areas.
   a. Increase the number of students successfully completing mathematics courses at the level of Algebra II or higher in high school.
   b. Increase the number of students successfully completing a State Scholars Course of Study (includes increasing the number of students completing a physics course.)
   c. Increase the number of students successfully completing college dual enrollment courses in high school.
2. Increase the readiness of high school graduates for other postsecondary pathways in STEM areas.
   a. Increase the number of students successfully completing industry certifications, state licenses and NOCTI assessments in high school.
   b. Increase the number of students successfully completing career and technical education concentrations in high school.
3. Increase public understanding and support for K-12 STEM education redesign as an integral part of improving high school graduation rates and supporting Virginia's innovation capacity.
   a. Increase business financial support for career and technical education.
   b. Increase legislative support for career and technical education

D. Structure of Virginia's STEM Center initiative

The primary structure for Virginia's initiative is the development of a network to leverage the separate activities of two or more existing STEM Centers in the state. However, our initiative will contain elements of all three posited structures for this grant.

- We will support the development of up to six Governor's Academies for Career and Technical Education as described in the Overview. These academies may be new centers developed in response to this project, or existing centers in which standards are raised and efforts are refocused to advance Virginia's STEM agenda. Partnerships with industry, higher education and regional workforce officials will be integral to the Academy model.
- We will create a Governor's Exemplary Standards Award program to raise the rigor and quality of career and technical education programs across the state. This will be a two-step process: programs will work with business advisory groups and postsecondary faculty to validate their attainment of rigorous standards, and then apply for the Governor's designation. Over time there will be a growing network of Governor's Exemplary Programs that share best practices with each other and with other programs striving for this designation.

E. Objectives

NGA Core Objectives

Virginia's implementation of the STEM Center grant will address the following two core objectives:

3. **Seek innovative new school, curricula, assessment and standards models in STEM education and bring successful models to scale.** The Governor's Academies and Exemplary Standards Awards Program are new school and standard models for STEM education, and both are eminently scalable. The criteria for both programs will encourage innovative curricular, assessment and professional development strategies.

5. **Develop a public-private partnership in one or more regions of the state, between leading economic clusters; K-12 districts; postsecondary institutions; state, county and local government; and the general public – to redesign a region's K-16 STEM education system to support the regional economy's innovation capacity.** Partnerships with business, higher education and regional workforce officials are integral to both components of Virginia's proposal. In keeping with current efforts to redesign Virginia's workforce development system, we will leverage relationships with Workforce Investment Boards, industry advisory boards convened by Workforce Coordinators from community colleges, and Career Pathways/Tech Prep/Perkins Leadership Teams convened by community colleges and local school divisions, and use this opportunity to focus and strengthen those relationships as business-education partnerships serving the full spectrum of K-12 through postsecondary education. Partners will participate in planning and development of academies, validate CTE programs' attainment of exemplary standards before the programs can apply for state recognition. A coordinated approach with our workforce, economic development and education colleagues will reduce fragmentation and improve the alignment of the P-16 system with regional industry needs and state priorities.

Virginia's Specific Objectives

Below are the mission, goals and specific measurable objectives for Virginia's STEM Center initiative.

Mission
To provide expanded educational opportunities for secondary students to gain STEM literacy and other knowledge, skills and credentials that will prepare them for high-demand, high-wage and high-skill careers, through partnerships of business and industry, public schools, community colleges and universities, and government.

Goal #1: To maximize opportunities to prepare students for targeted careers, by breaking down barriers between traditional core academics and career and technical education; between high school and postsecondary education and training; and between education and the workplace.

Specific Measurable Objectives
1A. Improve academic achievement of CTE students.
1B. Increase utilization of dual enrollment courses.
1C. Provide workplace experiences for more students.

Goal #2: To raise student aspirations, attracting more students to postsecondary education in preparation for technical careers, especially targeting students who might otherwise have settled for a curriculum that did not prepare them well for postsecondary education or work.

Specific Measurable Objectives
2A. Increase high school graduation rates and reduce drop-out rates.
2B. Increase enrollment and retention in postsecondary education.
2C. Increase proportion of students completing a college and workplace ready curriculum in high school.
2D. Reduce the proportion of students requiring remediation in college.

Goal #3: To provide well trained workers to support the recruitment of new businesses and industries to the Commonwealth and to meet the workforce needs of existing business and industry.

Specific Measurable Objectives
3A. Increase number of industry certifications and other industry- and postsecondary-recognized credentials awarded to high school students.
3B. Increase the number of graduates employed in technical and high-skill careers.
3B. (Long-term) Increase enrollment in and completion of targeted career pathways at community colleges and senior colleges.

In pursuing these goals, Academies must provide CTE programs that are part of Career Pathways in strategically targeted industries identified for future regional and state growth (energy, electronics, aerospace, biotech, and

others), and current high-demand fields as specified by regional industry partners and supported by industry and occupational cluster analyses, as described in the Gap Analysis.

Specific activities for which funds are requested

Governor's Exemplary Standards Program – nominal planning costs will be covered with state funds, and will include costs of bringing together CTE administrators and instructors and higher education, workforce and industry advisers to develop the criteria for exemplary standards awards, based on the rubric developed by the National Dissemination Center for Career and Technical Education. An outline of evidence to demonstrate program quality, significance and effectiveness can be found in the description of the Standards program in Attachment C. Once the standards are finalized it will take approximately one academic year for programs to conduct their reviews and document their attainment of the standards. This process must occur program-area by program-area and it will take centers several years to complete reviews for all programs. It is a two-step process requiring industry-driven validation at the local/regional level followed by application to the state. It is anticipated that in the second year of the grant about 12 programs will qualify for this recognition. Funds are requested to support a portion of a project director at the Department of Education to coordinate the review process. Funds are also requested for incentive awards for successful applicants. Awards will include $5,000 grants for programs to pursue continued improvement activities, a banner to display at the school with the Governor's Exemplary Standard Award designation, and other small incentives such as caps or polo shirts for lead teachers with recognition for the award.

Governor's Academies for Career and Technical Education – internal planning costs will be covered with state funds. Matching funds have been secured for five $20,000 planning grants in year 1 for regional partnerships to develop their collaborative academy proposals. Grant funds are requested for one additional planning grant. Grant funds are also requested for two $100,000 implementation grants (matching funds support the remaining four start-up grants) including coordination, recruitment, professional development, and marketing and communications. Funds are also requested to support a portion of a project director at the Department of Education to coordinate technical assistance and proposal review. Non-grant funds will support equipment and facilities costs for program start-up.

F. Two-Year Work Plan

Specific Activities and Timeline

A description of the proposed Governor's Exemplary Standards Program and Governor's Academies for Career and Technical Education is provided in Attachment C. Specific grant activities to implement these initiatives are presented in the table below. The italicized text in the first column represents the key recommendations addressed by each activity from *Building a Science, Technology, Engineering and Math Agenda*. The numbering is as follows:

1. Align state K–12 STEM standards and assessments with postsecondary and workforce expectations for what high school graduates know and can do.
    a. States should focus on aligning standards and assessments with international benchmarks through state level participation in international assessments.
    b. States should align K–12 STEM expectations with all postsecondary pathways.
2. Examine and increase the state's internal capacity to improve teaching and learning.
    c. States should develop a communication strategy to engage the public in the urgency of improving STEM.
    e. States should support promising new models of recruiting, preparing, certifying, compensating, and evaluating teachers in STEM content areas.
3. Identify best practices in STEM education and bring them to scale.
    a. States should create and expand the availability of specialized STEM schools.
    b. States should develop standards and assessments in technology and engineering as well as math and science.
    d. States should develop standards for rigorous and relevant Career and Technical Education (CTE) programs that prepare students for STEM related occupations.

Month/ *Recomm*.	Grant Activities	Responsible Parties
July-Sep 2007 *Rec. 3d.*	1. Convene statewide advisory group to develop Governor's Exemplary Standards for CTE Programs, based on existing rubric from National Dissemination Center for CTE.	Secretary of Education (SOE) & staff responsible and will include Department of Education (DOE) staff, incl. Office of CTE, local school division CTE personnel from across the state including CTE administrators and teachers, community college and university faculty, members of industry advisory boards and Board of Education.
Rec. 3a.	2. Issue competition for Governor's Academy Planning Grants. Applicants must be regional public-private partnerships between major employers in a region, regional/ local workforce and economic development officials, school divs, postsecondary institutions, and the general public.	Project team develops criteria, with participation of industry advisors and all education sectors. Notice of competition issued by Superintendent of Public Instruction and with supplemental dissemination through Secretaries of Education, Commerce and Trade and Workforce to key agencies and constituencies.
Rec. 1b.	3. Develop career pathways for students from K-12 through postsecondary and graduate education that prepare students for current high demand, high skill and high wage jobs at various levels of education, and pathways that prepare students for careers strategically targeted for growth to ensure Virginia's success in innovation and knowledge-based industries.	This is an ongoing activity, initiated prior to grant and continuing through grant period and beyond. Key parties are Postsecondary Perkins/Tech Prep Director at the Virginia Community College System and Career Pathways/Tech Prep Leadership Teams at the colleges; DOE Office of CTE Director and local secondary CTE directors at the division and school levels; industry advisors as discussed in E.5 above; higher education faculty where appropriate based on career pathway; state, regional and local economic development and workforce officials and the Virginia Workforce Council.
Rec. 1b. and 3b.	4. Participate in second ADP Alignment Institute and conclude work of NASA-facilitated review panels for physics, chemistry and engineering.	ADP Technical Team (12 SOE, DOE, high school, community college, and university faculty/staff), NASA scientist on loan with volunteer review panels of academic and industry experts, and campus review teams from 30 public, private, 4-year and community colleges.
Rec. 2c.	5. Adapt P-16 Executive Communication Plan to deliver STEM education redesign message.	SOE and P-16 Council
Oct-Dec 2007 *Rec. 3a. and 3d.*	6. Propose Governor's Exemplary Standards and Guidelines for Governor's Academies for CTE to Board of Education and disseminate information to school divisions upon adoption.	Recommendation to Board from Superintendent of Public Instruction. (See activity 1 for make-up of planning team.)
	7. Award Governor's Academy Planning Grants and initiate technical assistance to regional consortia.	Superintendent of Public Instruction to issue. Project team and P-16 agencies (DOE, SCHEV, VCCS) provide technical assistance, coordinated by DOE project director.
Jan-Mar 2008 *Rec. 3a. 2d., 2e. Rec. 3d.*	8. Introduce and support legislative package including operational add-on funds for Academies and codification of P-16 Council.	Governor, Policy Office and SOE staff.
	9. Collect baseline data for all indicators	Coordinated by DOE Project Director.
	10. Develop materials and incentives for Exemplary Standards Awards (e.g. banners and labelwear)	Coordinated by DOE Project Director with input from project team.
Apr-Jun 2008 *Rec. 3a. Rec. 3d.*	11. Accept and evaluate proposals for SY 2008-09 Governor's Academies, award up to 6 Academies.	Review team with industry, secondary education, community college, university, economic development, and workforce representation make recommendations to Superintendent. Coordinated by Project Director. Superintendent recommends to Board of Education.
	12. Accept and evaluate applications for Governor's Exemplary Standards Awards, confer awards.	DOE staff evaluates proposals. Recommendation to Board from Superintendent of Public Instruction. Attainment of standards must be validated by local industry advisory group prior to application to state.
July-Sep 2008 *Rec. 3a. Rec. 3d.*	13. Initiate up to 3 Governor's Academies for CTE	Regional partnerships with technical assistance and oversight from DOE, VCCS and SOE staff.
	14. Continue evaluating applications and awarding Exemplary Standards awards.	Same as 12.

Month/ *Recomm*.	Grant Activities	Responsible Parties
Oct-Dec 2008 *Rec. 3a.*	15. Closely monitor implementation of Academies.	DOE Project Director with SOE, DOE and VCCS staff.
Jan-Mar '09 *Rec. 1a, 3a. 3d.*	16. Introduce any additional legislation and funding required for Awards and Academies.	Governor, Policy Office and SOE staff.
Apr-Summer '09	17. Complete major activities, collect outcome data for indicators and evaluate project.	SOE and DOE staff.

The activities directly support the **structure** of the grant by laying the groundwork for and then establishing a ***network*** of Governor's Exemplary CTE Programs. Programs in this network will share best practices with each other and with other programs striving for the designation. The network may include new centers developed in response to this project and existing centers that rise to high standards or refocus their programs to advance Virginia's STEM agenda.

The activities address both NGA **core objectives** and directly support the mission, goals and specific objectives for Virginia's initiative. The Academies and Exemplary Standards are new school and standard models for STEM education, and both are eminently scalable. The criteria for both programs will encourage innovative curricular, assessment and professional development strategies. Partnerships with business, higher education and regional workforce officials are integral to both components of Virginia's proposal, as described in E under Core Objective 5.

The primary progress measures for these activities will be:

- An expanded number and quality of STEM focused schools in the state that serve all student groups
- An increased number of college-level credits earned by high school students and transferred to postsecondary institutions
- An increased number of K-12 students taking higher level math courses beyond Algebra I
- An increased number of students enrolled in CTE programs targeting current employer needs and STEM occupations.

Policy changes required for sustainability

The following policy changes will be required to sustain Virginia's reform efforts beyond Governor Kaine's term:

- Codification of the P-16 Education Council – Governor Kaine will submit legislation to the 2008 General Assembly to institutionalize this council.
- Creation of a budget line-item for Governor's Academy for CTE add-on funding, analogous to the Governor's School add-on to Standards of Quality funding.
- Promulgation of regulations for the new Technical and Advanced Technical Diplomas. The Board of Education has opened the Standards of Accreditation under the Administrative Process Act for this and other changes.
- Establishment of Board or Department of Education Guidelines and Procedures for Governor's Academies and Governor's Exemplary Standards Awards. These will include policies and procedures, rather than regulation or legislation.

Progress will be measured by the timely development and successful adoption of the laws, regulations and policies identified.

Strategies for building public support

The need to build public support for Virginia's STEM redesign begins with parents and school counselors. Many parents of middle and high school students and counselors are familiar with the vocational education of the last generation, and steer their children away from CTE because they may not understand its potential as a rigorous academic program in a relevant applied context. A primary goal of our communication plan will be to get parents to understand the imperative that students gain STEM literacy and other critical 21st Century skills,

and that a high-quality CTE program is an excellent way for many students to achieve this competency level. We will work with the Virginia Career Education Foundation to communicate this message to students, parents and counselors.

Other important target audiences are education policy-makers including state and local elected and appointed officials and school division personnel, members of the business community, and the general public. The P-16 Education Council will play an important role in communicating the needs for STEM redesign and garnering support for the efforts outlined in this grant proposal and other components of Virginia's STEM agenda. Each member will work with his or her constituent groups (K-12 community, higher education, business, legislature, school boards) to communicate the STEM message. The Governor, the Secretary of Education, and his policy staff will meet with General Assembly leadership, education committee leaders, and members of the House and Senate on this topic, and will keep STEM redesign issues in front of the business community through meetings and speeches with industry groups. The Virginia Workforce Council and the Council for Virginia's Future are business opinion leaders and are represented on the project team. The Governor has several venues in which to appeal to minority population leadership as well. The Governor will continue to use a variety of communications media to bring STEM redesign and CTE to the forefront. This includes use of his and the various education agencies' Web sites; public service announcements; radio talk shows, and news releases.

Progress in building public support will be measured by an increase in the number of students enrolled in CTE programs and earning industry-recognized credentials; increases in press coverage across the state on CTE and STEM education; successful passage of legislation and funding to support Virginia's efforts to reinvigorate CTE; and increased business support for CTE programs.

Budget

Please see Attachment B, budget form, and narrative in section J.

G. Connection to Other State Activities

P-16 Alignment

Virginia established its P-16 Education Council through its NGA Honor States grant. The P-16 approach is critical to the career pathways model for CTE that will be emphasized in our STEM redesign. We are preparing high school students for postsecondary education at various levels and the workplace and must work as a system to align curricula, assessments, credits, and expectations. Current alignment efforts include participating in the ADP Network and partnering with NASA to align science (starting with physics and chemistry) and engineering standards with postsecondary and industry expectations. The Department of Education is exploring the use of end-of-course tests as indicators of college readiness, and how to use those tests to provide remediation while students are still in high school. The General Assembly this year funded a community college transfer grant program to encourage students to earn their Associate Degrees at a community college and transfer to a four-year college, which will support our career pathways approach. Virginia's P-16 longitudinal data system is in its third year of implementation and will be able to provide data on the first complete high school cohort in 2008. When fully implemented, the system will be able to supply data for continuous improvement of the educational system from teacher preparation through student success in postsecondary education and beyond.

High School Reform

Virginia participates in the NGA Honor States grant program, and is in its final year of performance for its grant. Components of our high school reform that are most closely related to STEM redesign include expansion of our Algebra Readiness initiative, programs to promote advanced coursework and industry certification in high school, career planning initiatives and postsecondary awareness programs.

Virginia also participates in the State Scholars Initiative through our Commonwealth Scholars Program. The program was initiated in 11 pilot school divisions in 2006 and is expanding to several additional divisions with support from business in 2007. The lead agency is the Virginia Career Education Foundation (see under CTE below), fitting well with the business partnership aspect of State Scholars. This partnership to raise student awareness of career options and the importance of completing a rigorous course of study will be a key tool in our STEM agenda.

Career and technical education

In 2005 the General Assembly provided funding for the Virginia Career Education Foundation (VCEF), a 501(c)(3) non-profit organization governed by a board of directors representing industry, education, and the legislature. The purpose of the foundation is to further career and technical education in Virginia's Schools. VCEF President Emily Richardson is a member of Virginia's STEM redesign team.

The DOE Office of Career and Technical Education and the Virginia Community College System Office of Postsecondary Perkins/Tech Prep are leading Virginia's work to establish career pathways for students from K-12 through postsecondary education. Their work is increasingly focused on career clusters and pathways in keeping with Perkins IV. Virginia submitted a one-year transitional plan for Perkins this year with a career pathway program of study, and each school division is required to submit at least one career pathway program by June. The Virginia Community College System is requiring colleges to develop or improve, with local school divisions and business and industry, at least three articulated, secondary to postsecondary (4+2 and 4+2+2) Tech Prep career pathways based on local industry needs in order to qualify for Tech Prep funds. State-approved program elements include articulation and dual-enrollment, business and industry partnerships (which this project will leverage as described under E., core objective 5), curriculum improvement and alignment, career coaching and planning, project and work-based learning, transition services and sustainability. The development of career pathways in targeted clusters, and the required participation of industry, economic development and workforce officials are integral to Virginia's STEM redesign. The clusters approach will help to focus Virginia's CTE efforts on programs of study relevant to our regional economies.

There is great interest in advancing career and technical education in the General Assembly, which this year directed the Board of Education to develop two new technical diplomas to encourage students to reach beyond the Standard and Advanced Studies Diplomas to include CTE course sequences.

STEM Education

Virginia offers several highly selective STEM-focused specialty programs including 11 regional Governor's Schools and five school-district run STEM specialty centers. Governor's Schools include academic year programs, residential summer programs and regional, nonresidential summer programs.

The 2006 General Assembly established a joint subcommittee to study science, math, and technology education in the Commonwealth. The subcommittee is exploring current components of STEM education in Virginia. The Superintendent of Public Instruction, Secretary of Finance, Chancellor of the Community College System and President of the Center for Innovative Technology are subcommittee members, along with legislative and business representatives. The Chairman, Delegate John Cosgrove, is enthusiastic about a CTE-based approach and is a member of the project team.

Several universities provide professional development opportunities for inservice teachers. One strong example is the Virginia Tech VT-STEM Outreach Program which offers curriculum and professional development support for K-12, and is part of a larger program combining economic and workforce development with P-12 STEM education improvement.

Workforce realignment and economic development

The Governor, legislature and business community are engaged in a process to realign Virginia's workforce development system. The new structure is still being developed but will rely more heavily than in the past on the community colleges, and is being designed with a strong emphasis on regional clusters and skill attainment at various levels. The CTE approach of this proposal fits perfectly with the goals of workforce system realignment, incorporating a tighter regional industry focus, use of Workforce Investment Boards as advisors, and selection of targeted industry clusters. The Workforce strategic plan calls for all public high school students to have individualized high school plans to ensure course selections are aligned with students' transition and career goals after high school – secondary to postsecondary career pathway frameworks will be a key tool for these plans. The strategic plan also calls for a statewide career pathways and workforce communication plan, which will be coordinated with the STEM redesign communication plan.

H. Governance Structure

The Governor's Academies for Career and Technical Education will be part of the school division, and thus will fall under the governance of the local school board and superintendent. To qualify as Academies, they will be required to have advisory or governing boards including community college, university (where applicable), industry, economic development and workforce officials. In some cases Academies will be Joint Schools as provided for in the Code of Virginia, and will include representation from multiple school divisions within a region on the governing board. Academies will be required to meet criteria established by the project team, subject to review by the Governor's Office and Department of Education. The Exemplary Standards Awards Program will require a local/regional industry-led team to validate that a program has met the rigorous criteria for the awards, before the program can apply to the state for this designation. As noted above, we will leverage relationships with Workforce Investment Boards, industry advisory boards convened by community colleges Workforce Coordinators, and Career Pathways/Tech Prep/Perkins Leadership Teams convened by community colleges and local school divisions for this purpose to the maximum extent possible.

I. Readiness for Change

Several observers have noted that the "stars are aligned" for reinvigorating CTE in Virginia. Raising the rigor and status of CTE was one of the primary education planks in Governor Kaine's campaign, along with early childhood education and creation of a new university in Southside Virginia. The Governor speaks often of his father's experience having to close his small metal-working shop because he could not find qualified employees interested in pursuing skilled work. He also speaks of his experience as a missionary in Honduras, where he served as principal of a technical school that transformed the lives of villagers. The General Assembly has taken up the issue, with numerous proposals in the last few years to expand CTE options for students. This year the Assembly approved legislation (HB 2039, Hamilton/ SB 1147, Wagner) creating two new technical diplomas, one at the Advanced Studies level and one "at or above" the level of the Standard Diploma. The Governor is encouraging the Board of Education to set the Technical Diploma at least at the level of the State Scholars Core. The Assembly also passed legislating requiring school divisions to report the number of CTE completers graduating each year (HB 1978, Lohr/ SB 1148, Wagner). The bill did not pass due to cost concerns, but it is anticipated that over time the Technical Diploma or a diploma reflecting the State Scholars Core may replace the Standard Diploma. Also proposed and passed in one house of the legislature was funding for creation of three comprehensive technical high school programs that stress high academics and career and technical education (Hamilton). These were to be comprehensive, full-day schools demonstrating a working partnership with at least one Virginia college or university, including community colleges, and at least one private sector business partner. The funding was not approved in the final budget conference, but there was extensive support for the concept. The 2006 joint legislative subcommittee studying STEM education is another indication of the legislature's commitment to building an effective STEM policy agenda.

The team members for the grant have worked together extensively in recent years on several initiatives. Most of the team members are engaged in Virginia's NGA Honor States Grant, and have collaborated on the myriad initiatives that are part of that grant program. Many of the team members and their organizations are part of the P-16 Education Council and have worked together for 18 months, primarily on longitudinal data system issues and college and workforce readiness. There are many examples of collaboration among Virginia's high schools, community colleges and public and independent colleges. Virginia's Commonwealth College Course Collaborative provides a set of academic courses that fully transfer as core requirements and degree credits at public and private colleges and universities, and these institutions also collaborate on the VirginiaMentor web site that provides an Early College Transfer Tool showing students how to maximize the amount of college credit they earn in high school. There has been tremendous progress in the last two years in the areas of dual enrollment and articulation and transfer agreements between community colleges and four-year colleges. Several universities are offering guaranteed admission to community college students who meet certain requirements. For example, students who complete an engineering associate degree at a Virginia community college with a grade point average of not less than 3.0 are guaranteed admission to the general engineering program at Virginia Tech.

Virginia has made substantial progress in many areas through its commitment to innovative policies and practices. We are participating in the American Diploma Project Network to develop a common standard for college and workforce readiness, and align standards and assessments accordingly. We are engaged in a parallel process with NASA to review science (starting with physics and chemistry) and engineering standards. Our Standards of Learning are carefully designed to align instruction vertically among grade levels. We have established a unique student identifier in our P-12 data system that can be transmitted to higher education institutions to allow longitudinal tracking across systems. We have established the Career Switchers alternative route to licensure program, and numerous Math-Science Partnerships to improve preparation of K-12 teachers. We have developed outstanding STEM-focused Governor's Schools that enjoy strong support from the legislature.

There is strong bipartisan support for career and technical education. Indeed, the legislative proposals noted above were all patroned by Republican legislators (Hamilton, Lohr and Wagner.) This project is one for which legislators on both sides of the aisle will be able to join constructively with the administration to advance Virginia's education agenda.

J. Budget

Please see budget table in Attachment B and *Specific activities for which funds are requested* under section E above. The fiscal agent for this grant will be the Virginia Department of Education. Funds have been requested for a project director at the Department, at a salary of $62,000 with a fringe benefit rate of 37.44% including 11.15% required contribution for Virginia Retirement System, 6.20% and 1.45% for Social Security and Medicare, 1% for group life, 1.2% for retiree health credit and 2% for disability coverage, $8,472 for health insurance and $480 for cash match to deferred compensation. Grant funds are requested for travel, meeting expenses and supplies for four major activities: Academy planning, Academy implementation, Exemplary Standards planning and Exemplary Standards implementation. A combination of grant and matching funds will be used for grants to regional/local consortia to develop and implement these programs, as follows: $5,000 incentive grants for 12 CTE programs that earn Exemplary Standards Awards ($60,000 grant funds), $20,000 planning grants for 6 consortia to plan Academies ($20,000 grant funds and $100,000 match from state-level Workforce Investment Act Funds, letter of commitment provided in Attachment E), $100,000 implementation grants for 6 Academies ($200,000 grant funds and $400,000 match from additional workforce funds sought from Virginia Workforce Council in July allocation process). Additional state funds will support grant objectives, including a to-be-determined per-pupil add-on to state education funding for Academy students, and existing funding for industry certification (over $1 million annually) and vocational equipment ($2.3 million annually).

K. Additional Considerations

Virginia is an active partner with the NGA. At the 2007 Winter Meeting, Governor Tim Kaine hosted and facilitated one of three Governors panel discussions on the Chairman's competitiveness agenda. Governor Kaine actively serves on the Education, Workforce and Children's Welfare Committee, and he is a lead Governor on the No Child Left Behind Task force and the taskforce to redesign the American High School.

The Governor's Washington DC representatives work with the NGA's Federal Relations and Center for Best Practices on a regular basis. Virginia staff are currently involved in a host of NGA workgroups, including the WIA reauthorization and Farm Bill reauthorization groups. The DC representatives are also engaged with NGA Federal Relations and Center staff on minimum wage legislation, REAL ID, unemployment insurance, and offshore drilling legislation.

The Commonwealth of Virginia remains one of NGA's most enthusiastic participants. Virginia regularly sends policy advisors to NGA conferences in Washington, DC and around the country. The Virginia Workforce Office has applied to participate in an NGA policy academy on senior volunteerism in the workforce, while education advisors attended a number of meetings on the Chairman's competitiveness initiative. Virginia's involvement has included the participation of cabinet secretaries, governor's staff, and senior agency administrators. Governor Kaine and Virginia officials have been deeply engaged in NGA's Honor States Initiative. The Virginia team has met the requirements of the grant, including implementation of a P-16 Council, and maintains regular contact with NGA staff on the progress of grant activities.